1
Introduction

THE BISON OF YELLOWSTONE NATIONAL PARK are unique among bison herds in the United States, being descendants, in part, of the only continuously wild herd in this country. They are today a hybrid herd, being a mixture of the plains bison (*Bison bison bison* Linnaeus), introduced into Yellowstone National Park in 1902, and mountain or wood bison (*Bison bison athabascae* Rhoads), which originally inhabited the Yellowstone and surrounding country. They are a wild population, unrestricted by either internal or boundary fences, and subject to minimal interference by man.

Although members of a species which nearly became extinct, and a species of great historical interest, Yellowstone's bison have not been objects of extensive research. McHugh (1958) studied behavior of bison in Yellowstone. Rush (1932a), Tunnicliff and Marsh (1935), and Locker (1953) published information on parasites and disease. Cahalane (1944) summarized the history of the introduced herd and management practices as of that date.

The present study was begun in 1963 to provide basic data on the life history, habits, and ecology of bison in the park. This study report, based on extensive field work and supplemented by an intensive search for historical information, provides a basis for management and for evaluation of the importance of this particular bison population. As a source of interpretive information for the many people who visit the park, the report may make the bison less of a myth, but a far more interesting reality.

Methods

Information on numbers, composition of groups, distribution, and habits was obtained by using fixed-wing aircraft and helicopter flights, horse and ski travel, and limited vehicle use. No set pattern of route and interval was established; work was scheduled according to season, general animal location, and distances involved. Time of day was generally not a factor. A monocular and a variable-power spotting scope were used for observation.

Age and sex information was compiled at herd-reduction opera-

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tions at Lamar in the northeast quarter (Crystal trap) and on the Firehole River nearly 35 miles southwest of Lamar (Nez Perce trap) during the winters of 1964-65 and 1965-66. Reductions have been held in the park at intervals since 1932, primarily to keep the bison population at numbers suggested by range condition reports and surveys (Rush 1932b; Grimm 1939; Kittams 1947-58, 1949; Soil Conservation Service 1963, 1964). For reductions after 1960, animals have usually been driven into the two above-mentioned large live traps by coordinated herding efforts of two helicopters. Squeeze chutes permitted handling of most individuals, after which the bison were released or were trucked to a local slaughterhouse. Animals were selected for slaughter on the basis of brucellosis infection. Uninfected animals were also taken to fill removal quotas. All animals were permanently metal eartagged during brucellosis testing, and marked with temporary backtags, which were visible even from an airplane. Most were aged by Department of Agriculture veterinarians and weighed.

During both winters, some released animals were marked with color-coded neckbands for area and individual recognition, and for the year of banding. Animals—preferably females, yearlings and older—were chosen a few at a time on different trap days to distribute marked animals among released groups as much as possible. Forty-four individuals (30 of them females) were neckbanded, half at each trap. Seventeen females and two males were young adults and older. Half of the neckbands were lost during the first year. More males than females lost neckbands. Attempts to neckband animals through use of field immobilization techniques were not satisfactory.

During slaughter operations, approximately 47% of the animals removed from the park were examined for pregnancy, abnormalities, and evidence of injury or disease other than brucellosis. Reproductive tracts could not be examined, nor fetal sex ratios determined because approximately half of removed animals had brucellosis or were suspect. Department of Agriculture veterinarians advised against examination of reproductive organs, where the *Brucella* organism most often localizes, to avoid contamination of slaughterhouse premises and exposure of personnel to the disease. Lower jaws were collected for age verification using the techniques of Fuller (1959).

Food-habit information came from analysis of 22 rumen samples collected from animals shot in the park at all seasons and in various locations. Percent composition of samples was determined by volume after separation and identification of materials. The analyses were supplemented by general field observations of animal feeding behavior.